

Computer shutter repair

the

SPT

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If you once forfeit the confidence of your fellow citizens, you can never regain their respect and esteem. It is true that you may fool all of the people some of the time; you can even fool some of the people all of the time; but you can't fool all of the people all of the time.

Abraham Lincoln



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The President's Pages

THINKING THINGS THROUGH

James Todd Amos

The vast majority of Photo-technologists use their knowledge in the field of repair. Thus, what we are attempting to do is to use our knowledge of photo-technology in a profitable manner. It is important to recognize that having knowledge of photo-technology is not the same as actually repairing photographic equipment. There is a process by which we merge photo-technological knowledge and repair techniques to do repair work. When we fail to merge repair technique and our knowledge, we become inefficient. The symptoms are excessive repair times, parts broken from frustration by the technician, and improper operation of the "repaired" equipment.

Repair philosophy is a set of basic principles which have been found, by experience or other means, to be valid. In this article I will present the basic principles behind my repair philosophy, as well as my reasons for believing in them.

From the basic principles are derived rules or techniques. These rules are what normally guide us while making repairs. Rules are interpretations of the basic principles applied to assumed circumstances. If the circumstances change, then the rules may have to change. Therefore, you must recognize that there are times when rules MUST be broken. Your reference is always whether the basic principles applied to the circumstances are in agreement with the rules.

The two basic principles I follow are:

- 1) Repair is an intellectual activity.
- 2) The sooner the intellectual process is applied during a repair, the more efficient the repair will be.

The reasoning behind the first principle is this: You generally cannot repair an item without knowing what it is supposed to do. The general approach to repairing is to conform all the individual functions of the parts to the function of the entire mechanism. Thus, you check the function of all the parts, correcting those parts whose functions do not contribute to the functioning of the entire mechanism. You can, of course, simply reassemble the equipment in every conceivable manner until you hit upon one method of assembly that works. That is one thing we will do when we give up on thinking through a repair. For the most part that method is used only in desperation, because it is very inefficient.

I don't think that we need to spend any more time on the first principle. It should be self evident. After all, those repairs we are most sure of are those where we know we have corrected the problem. Establishing a positive cause and effect relationship is certainly an intellectual activity.

The reasoning behind the second principle is subtle enough that many of us, myself included, miss it until we have been in the profession a number of years. It frequently makes the difference of whether or not a man makes it in this profession.

Failure to apply the second principle usually leads a man directly to "the disassembly trap". As many old hands can attest, it is an easy trap to fall into. We all know that many times it takes more time to figure out how to disassemble a camera than it does to fix it once you have gained access. We hear leaders in photo-technology describe camera construction as "Chinese

puzzles" in style. Some have advanced the theory that some manufacturers deliberately make access difficult to discourage repairs by photographers or even repairmen.

It is hard to resist a challenge, isn't it? Put an unfamiliar camera into the hands of most any new repairman, and the first thing he will try to do is to figure out how it comes apart! Leave a beginning repairman to himself while he tackles that unfamiliar camera, and no doubt he will hold a mental conversation with himself that will go like this:

"Never have seen one of these before. I wonder if it's a new design or a copy of one of the more familiar ones. Wonder how it comes apart. Let's see. Unscrew the rewind knob. Take out that ring underneath. Now to tackle the wind lever assembly. Have to figure out whether or not that plain disc on top of the lever unscrews. Right hand or left hand thread? No luck there. Let's open up the bottom and see if I can get a clue as to how to get that wind lever off. Hmm — everything must be hidden underneath that large mechanism plate. Well, I'll remove that too. Well, got that all apart, but still no clue about the wind lever. This time I'll try a large wrench and some solvent to soften any cement that might be present. Finally! Just a couple more times and the top is off. Have to pull off the speed knob. Felt something let go — guess I should have noted the speed and ASA it was set on before I pulled it off. Hope the timing won't be too hard to figure out. Now I can see what's under the top! It's not a completely new design. I'll just put the wind lever back on temporarily with a couple of screws and wind it. Son of a gun! Can't get it to budge. Well, I guess I'll see how it operates later. Well anyhow — I got the camera apart. Proves I'm a jump ahead of those manufacturers who try to make

cameras difficult to disassemble. Guess I'd better get on with business — where's that repair tag? Better see what they want repaired. Hmm — tag says 'shutter'. Before I can start working on the shutter I'd better get that transport working. Did the transport work before it came into the shop? I don't know because I didn't check it. That mechanism plate in the bottom had lots of gears and levers on it. I guess I will put that back in and see if it will work. Funny thing — can't get that mechanism plate to seat properly. Maybe if I try it that way — no this way — Well, I had to push on it a bit and lever it with my screwdriver, but I got it in. Still jammed! Well heck! I guess I had better trace out the whole darn transport — hope it doesn't take too long."

That repairman will spend literally days on a job estimated at several hours at most. In short, by starting the way he did, he assured himself that he would be very inefficient. But much more than time is involved. If this repairman becomes discouraged enough he will leave the equipment in far worse condition than when he received it.

Thinking should start the moment you receive a camera for repair. A good way to start is to determine from the information accompanying the camera what the customer's complaint is. Then inspect the camera carefully. Note what kind of care the camera has had. Has it been operated under adverse conditions? You can tell if it has been operated in areas of high humidity or sand simply by appearance many times. Look at the exterior screws. Has it been opened before? An attempted repair by the customer or another repair shop calls for different assumptions during the repair than with a camera that hasn't been touched since leaving the factory. Make sure that before you start the repair, you know what portions of the camera work properly, and which

parts don't. In short, get the maximum amount of information about the camera before you disturb things. Then — before you touch it with a screwdriver — determine whether the customer's complaint makes sense. If the customer has complained about the shutter, for instance, and your examination shows the shutter to be working properly, stop! Either deduct whether other malfunctions you found could be misconstrued by the customer as a shutter problem, or contact the customer directly to redefine his problem. Don't ever start to repair a camera without having a specific malfunction to correct!

Now having something specific to correct, keep it foremost in your mind

as you work. Deduct from the information you have what most logically could cause the malfunction, and go after it. If your idea is wrong, stop! Rethink the problem in the light of the information you originally had, plus the new information you have, and proceed again. Don't wander aimlessly through the various mechanisms of the camera, and hope for the malfunction to suddenly become apparent. It won't happen.

To summarize briefly — don't do anything until you know (and can remember) why you are doing it! Stay out of the disassembly trap!

Readers are requested to contribute their ideas on improving repair efficiency.

COMPARASCOPE TESTING

of UNIQUE FOCAL PLANE SHUTTERS

Samuel L. Love, Founder and Past President of SPT

Focal plane shutter speed measurement in large cameras is sometimes awkward, especially when the focal-plane shutter cannot be placed close to the optical system in your test instrument. While this problem has never been great in cameras like the Speed Graphic, it invokes some problems in cameras like the Rollei 66 where there is a rearward projection of some part of the camera. Another problem similarly arises when measuring focal-plane shutter speeds in very large cameras like aerial cameras. The secret to taming this kind of measurement is simply to reverse the optics in the entire system. Use a slit aperture (either standard or specially made) in position next to the focal plane. Then put the focal plane close to the light source with the lens system toward the photo-optical pickup in

your Comparascope or Motion Analyzer. A large, uniform light source rather than the standard instrument light source might sometimes be an advantage. Of course, you may use any light source, like the illuminated screen system as found in the National Camera Exposure Meter Standard or you may separate the instrument's light and photocell housing for great distances between, if needed.

The camera lens then forms an integral part of the system. The camera lens tends to focus the light passing through the slit in the focal-plane shutter to the photo-optical system in the instrument. In such instances, it's possible to make a test on a focal-plane shutter much larger than would otherwise be imaginable — 4 x 5 or 9 x 9 inches or larger. Remember that you need to use a mask which contains a slit

aperture on the order of .010" to .015" wide (it should be no more than 20% as wide as the narrowest slit in the focal-plane shutter to be tested. Overall, the mask should be large enough to cover the entire focal plane.

Whenever measuring focal-plane shutter speeds, it's possible to selectively position the slit at the beginning and end of the curtain travel in order to measure variances in exposure across the focal plane.

With no slit mask restricting the flow of light through the focal plane aperture, it's possible to use this same concept when measuring curtain travel as described.

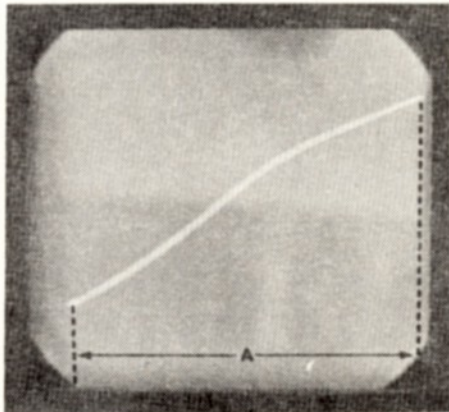
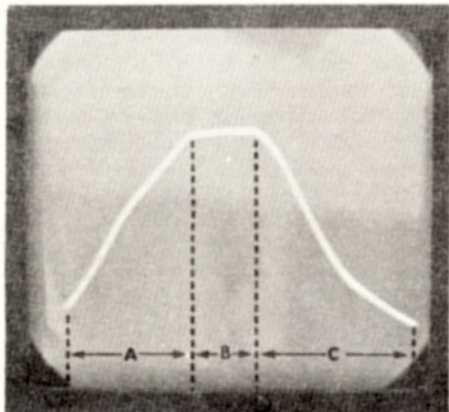
CURTAIN TRAVEL TIME MEASUREMENTS

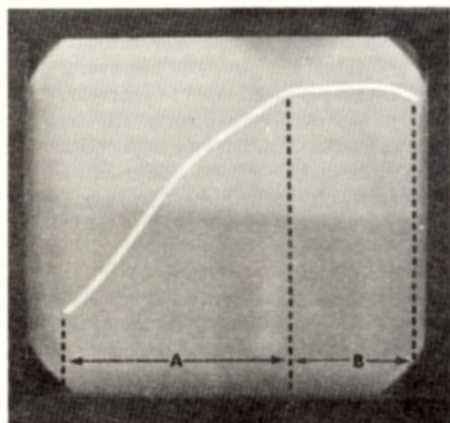
Measuring curtain speed on focal plane shutters is becoming more critical as faster shutters are introduced. Among these is the Copal Square and the new Regula 2000 CTL.

Some information on such testing can be found on page 122 of the SPT Service Notes. Another system varying

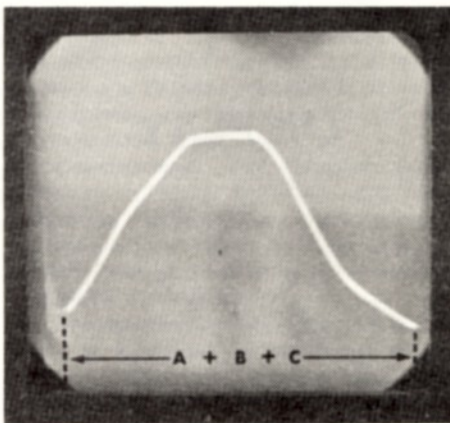
slightly from that described might be easier to use. As in the method referred to it involves operating the camera in such manner that the entire focal plane covers the lens aperture on the Comparascope or Analyzer photocell housing. This means that 35mm cameras are the only ones that can be handled easily in this way, but if the need arises an improvised system can be used for larger cameras also.

The big difference in this technique is to select the shortest shutter speed at which the entire aperture is uncovered. For many 35mm cameras this is 1/30 second. Many faster 35mm shutters uncover the entire aperture at 1/60 second. The Copal Square will uncover the entire aperture at an exposure setting of 1/125 second and the same is true of the Regula 2000 CTL. If you're not certain of the shutter speed which suits this function, you need merely set and trip the shutter under test until the Analyzer picture resembles Fig. 1. Note that there's no graticule in the Analyzer or Comparascope, although a time measuring graticule might be used directly.





Initially, select a sweep setting on your Comparascope or Analyzer that is sufficiently long. Most 35mm shutters have a total operating time on the order of 40ms or less. The .040 second sweep setting, then, is a good place to start. The trace reflects the three phases of shutter operation in which "A" represents the opening curtain uncovering the focal plane, "B" shows the period during which the entire focal plane is uncovered and "C" is the closing or second curtain recovering the aperture. The horizontal times "A", "B" and "C", of course, respectively represent time required for the opening curtain to travel across the focal plane; during which the entire aperture remains uncovered; and finally, that needed for the closing curtain to re-cover the focal plane. The individual times may be obtained either with the use of the ruled timing chart (these are available for your Analyzer or Comparascope at \$2.50 from National Camera) or simply seek the times by selecting sweep times to get: first, the



picture shown in Fig. 2 where the sweep setting equals the opening-curtain travel time; then reset the instrument to obtain the trace shown in Fig. 3 at which time the sweep setting equals "A" + "B"; finally, reset sweep time to obtain the trace shown in Fig. 4, which equals the total of times "A" + "B" + "C".

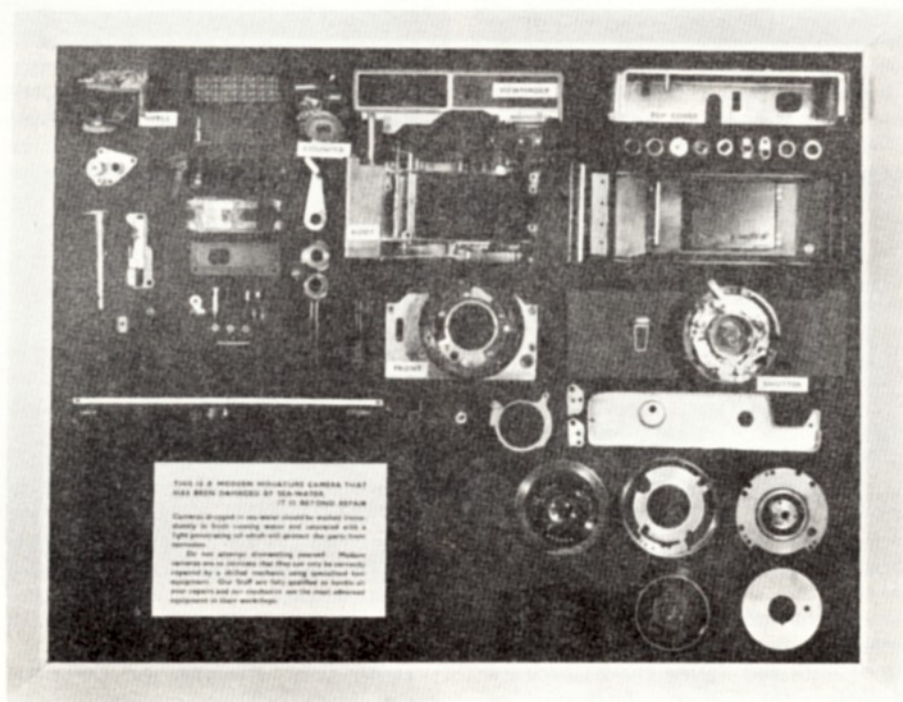
Obviously, the individual curtain travel times and the open time may be then arrived at by simple subtraction.

In most instances, opening-curtain travel time is the one of greatest concern. First, curtain tension is set to provide an opening curtain travel time within the limits specified by the manufacturer, after which the closing curtain tension is set to obtain uniform exposures across the aperture at high speeds.

Using your Analyzer or Comparascope, small variations in speed may be achieved by varying the opening curtain travel time within the limits provided by the manufacturer.

SEAWATER DAMAGE DISPLAY

This is a display of a modern automatic camera damaged beyond repair by sea-water. It was scrapped by the owner and laid out piece by piece in a camera repair workshop on green baize covered board surrounded by an attractive deep white frame with small printed cards describing main components. It has been shown in a number of shops, both in the windows and on the counters, and has created a great deal of interest. This layout shows very clearly all the damage sea-water can do and presents a startling illustration of the complexity of a modern camera and the work involved removing rust and sand.



Assembling A Camera Shutter Speed Meter

Reprinted from Popular Electronics, Sept., 1970

● **Editor's Note:** This Shutter Speed Meter is not a test instrument, and was not intended to be one. It is useful as an indicator of shutter performance only.

Technicians can use it several ways. One can be placed on each technician's bench to serve as a guide in making initial adjustments on shutters. Final adjustments should be made with a test instrument with greater accuracy.

This Shutter Speed Meter could also be loaned to photo dealers to stimulate business.

One to One-Thousandth Measurements with Reasonable Accuracy

A peak-reading voltmeter activated by a Phototransistor is calibrated for the range between 1.0- and 0.001-second shutter speeds. The voltmeter circuit uses a high-quality capacitor and a MOSFET. The builder can make his own meter coincide with the scale illustrated through manipulation of the various internal calibration controls.

How often have you wondered whether the shutter speeds marked on your camera are correct? Have you ever missed an important, unrepeatable shot because of over- or under-exposure and considered whether your camera's shutter was at fault? If you have, you probably took your camera to the repair shop to have it checked. For little more than it cost for that one check-up you can build your own Shutter Speed Meter so that you can check your camera anytime you have a suspicion that it is not performing properly. You can also use this device to check your camera for cold-weather operation.

Shutter speed ranges are 1 to 1/10 sec., 1/10 to 1/100 sec., and 1/100 to 1/1000 sec. In measuring shutter speed,

the camera is placed on the pickup unit with a light source over the camera. Then, the RESET button is pushed and the shutter is released; shutter speed is read directly from the single-scale meter. Any camera may be checked, whether it has a focal-plane or between-the-lens shutter. The meter retains a reading for several minutes, depending on the quality of the components used.

Construction. The Shutter Speed Meter consists of two physically separate sections: a light sensitive transistor in its own case and an electronics package on which the meter readout is mounted.

The schematic of the circuit is shown in Fig. 1. A foil pattern for a printed circuit board and component mounting layout are shown in Fig. 2. The printed circuit board was designed to mount directly on the meter terminals. If you do not want to use the PC board, assemble the circuit on perforated board following the same layout. Note that 5% resistors are used for R2, R3, and R4 to obtain nominal accuracy. For greater accuracy use 1% resistors. It is also important that capacitor C1 be hermetically sealed (glass or ceramic with metal) and of high quality. If you use the foil pattern, the potentiometers specified in the Parts List cannot be substituted.

A silicon transistor with low leakage must be used for Q2. Transistor Q3 is a MOSFET and must be carefully handled. The MOSFET is shipped with a shorting ring around its four leads to prevent the possibility of electrostatic charges accumulated on the fingers from damaging the transistor's gate. **Do not remove** this shorting ring until after the device has been installed in the circuit. If a shorting rivet is supplied, wind a single turn of copper wire around the four leads, remove the rivet,

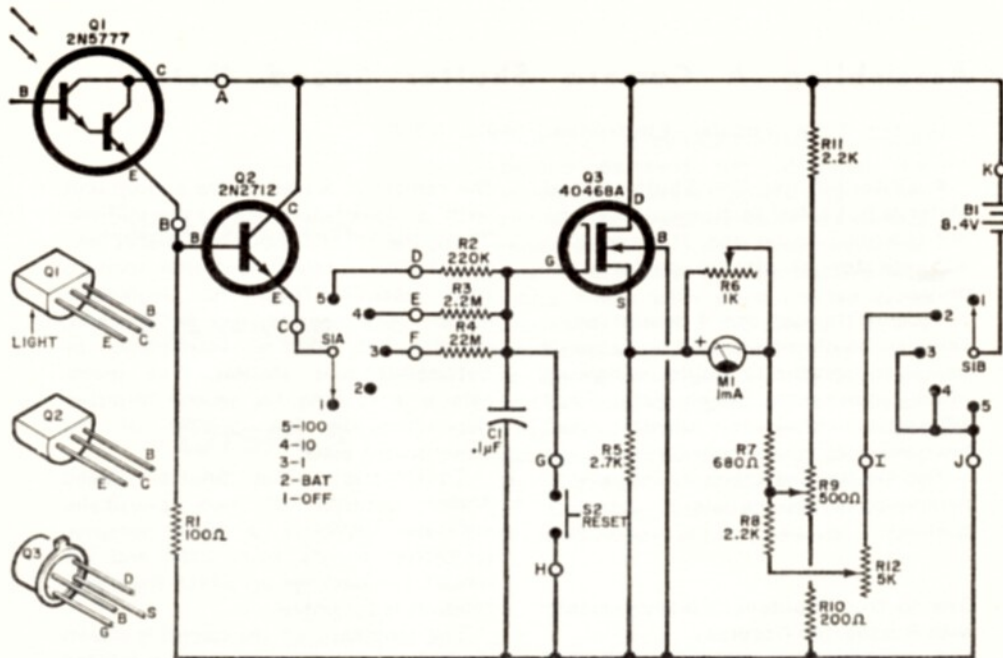


Fig. 1. The circuit is essentially a very high input resistance d.c. voltmeter with a MOSFET. It measures charge on capacitor C1, which is a function of how long light is applied to Q1.

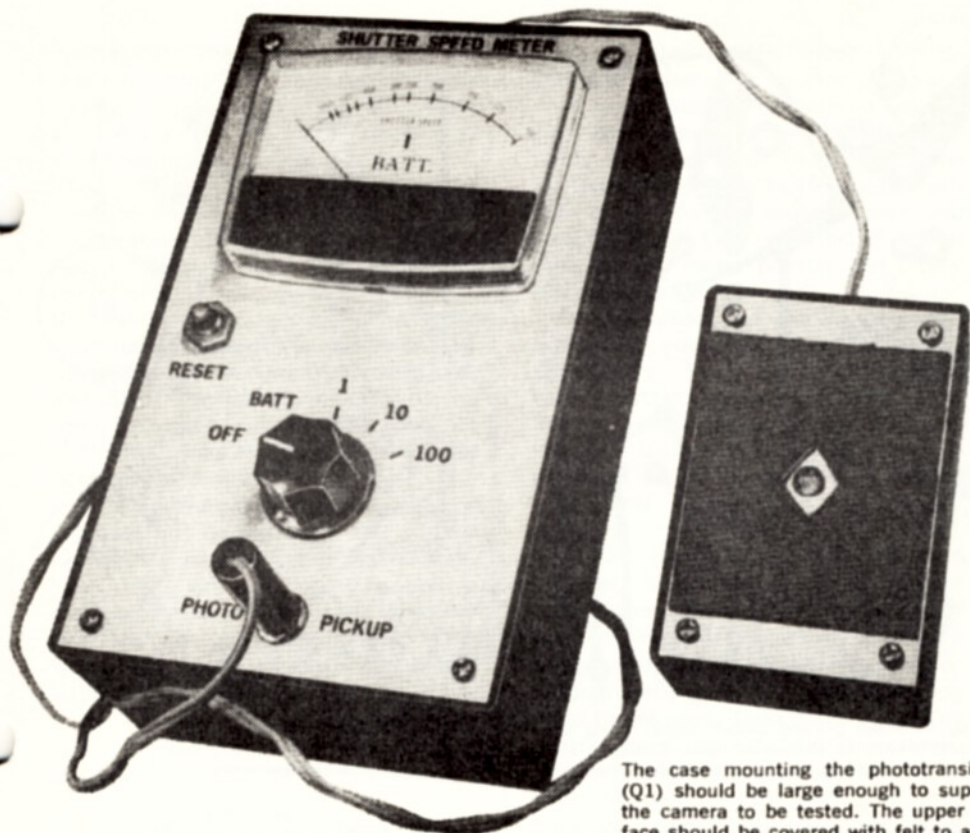
and leave the wire in place until construction is complete. When soldering Q3 into the circuit, use a heat sink on the leads and a small soldering iron rather than a soldering gun since it is possible for the magnetic field created by a soldering gun to damage the MOSFET. For further safety, ground the metal frame of the soldering iron. If, after construction is complete, you have to make any wiring changes, install a shorting wire around the MOSFET leads.

To remake the meter face, gently remove the front of the meter, taking care not to bend the needle, and carefully remove the meter scale. Cut out or copy the scale shown in Fig. 3 and put it on the meter face. Carefully reassemble the meter, making sure that the mechanical zeroing adjustment is properly aligned.

PARTS LIST

- B1—8.4-volt mercury battery
- C1—0.1- μ F, hermetically sealed capacitor (Sprague 96P-10491 or similar)
- M1—0.1-mA, d.c. meter (Calectro D1-912 or similar)
- Q1—Phototransistor (G.E. 2N5777)
- Q2—2N2712 transistor
- Q3—MOSFET (RCA 40468A)
- R1—100-ohm
- R2—220,000-ohm, 5%
- R3—2.2-megohm, 5%
- R4—22-megohm, 5%
- R5—2700-ohm
- R7—680-ohm
- R8, R11—2200-ohm
- R10—200-ohm
- R6—1000-ohm potentiometer (Clarostat U39 or similar if PC board is not used)
- R9—500-ohm potentiometer (Clarostat U39 or similar if PC board is not used)
- R12—5000-ohm potentiometer (Clarostat U39 or similar if PC board is not used)
- S1—2-pole, 5-position rotary switch (Calectro E2-163 or similar)
- S2—Momentary pushbutton switch
- Misc.—Plastic cases (Lafayette 99E62721 and 99E80722 or similar), printed circuit board, battery holder, transistor socket, felt, wire, solder, etc.

All resistors
½-watt



The case mounting the phototransistor (Q1) should be large enough to support the camera to be tested. The upper surface should be covered with felt to avoid scratching the face of the tested camera.

The printed circuit board and other components, including the meter are mounted in a 6" x 3-3/4" x 2" plastic box with a metal cover as shown in the photographs. Drill the required mounting holes for the meter so that the top of the meter is about 1/2" from the top of the panel. Drill the mounting hole for rotary switch S1 below the meter, on the panel centerline. RESET switch S2 can be located in any convenient place on the front panel. In the Prototype, a miniature earphone jack was used to connect the phototransistor box to the meter box but the wires can be passed through a small hole in the box just as well.

Mount the printed circuit board on the meter terminals and tighten the

nuts. This automatically makes the required electrical connections between the meter and the circuit. Mount the battery in a holder secured to the case. Use mercury batteries for stability. Wire up the circuit as shown in Fig. 1, but do not assemble the meter on the box until after calibration.

The box holding phototransistor Q1 must be large enough to support the camera to be tested. Drill a hole slightly smaller than the sensitive face (the rounded part) of the phototransistor at the center of the upper panel. Cement the phototransistor to the panel so that the light-sensitive surface is visible through the drilled hole. Attach a piece of felt to the upper surface of the case, cutting out a hole to match the

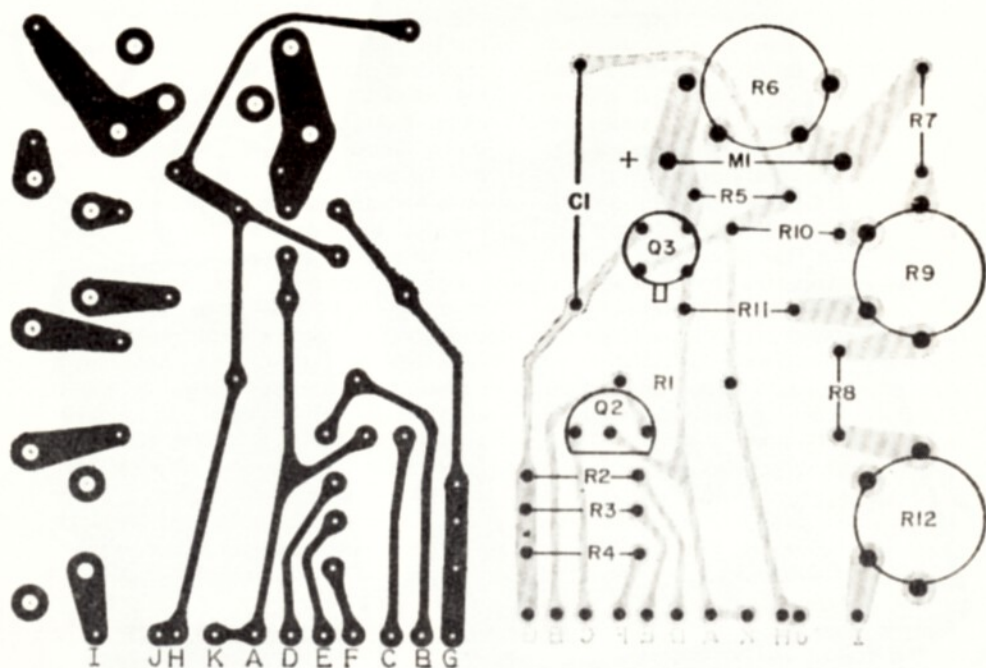


Fig. 2. Make printed circuit board using the actual size foil pattern at left. Install components as shown at right. Board is supported directly on meter terminals and should be drilled accordingly. Alter layout if potentiometers in Parts List are not used.

phototransistor hole, to protect the camera finish. In the prototype a transistor socket was used for the Q1 leads with the cable to the meter box attached to the socket.

Checkout and calibration. If at any time during the following tests, the meter deflects hard below zero, check out the instrument before installing it in the case. Place switch S1 to OFF and install the battery. Note that the meter needle rests on the left-hand zero mark. If it does not, gently adjust the mechanical Zero setting until it does. Place S1 in the BATT position and note that the meter deflects to the BATT position on the scale. Adjust R12 if it does not. A new battery may indicate slightly above the mark.

Connect the phototransistor to the circuit and place it near a bright light. Switch S1 can be in any position (1, 10

or 100). Note that the meter starts to indicate upscale. Remove the light source and note that the meter indication does not change. With the meter indicating upscale, depress S2, the RESET switch. The meter should drop to zero immediately. Adjust R9 to make the zero exact. Repeat this procedure a couple of times, making sure that the meter drops to zero whenever S2 is depressed.

The next step is calibration. If you have access to a time-interval counter, all you have to do is measure the length of time that charging voltage is present across C1 when a shutter is tested and adjust R6 so that the meter indication matches the counter reading. If you don't have a digital counter, you can use a camera having a 1-sec shutter that is known to be accurate and, using it as a model, adjust R6 to get a 1-sec

reading on the meter. Depress the RESET button after each test. Another means of calibration is to disconnect Q1 temporarily and apply 1.6 volts (a fresh flashlight cell will do) across C1. Then adjust R2 until the meter indicates exactly full scale.

Operation. Before using the Shutter Speed Tester, always check the battery condition and then depress S2 to zero the meter. Make sure the camera lens is wide open. To test the camera shutter speed, remove or open the camera back and place the camera on top of the phototransistor unit. Make sure that Q1 is directly under the center of the space occupied by the film.

Place a strong light source (such as a high-intensity lamp) over the camera not more than a couple of inches away from the lens. A camera with a between-the-lens shutter may be placed with the lens up or down, while types with focal-plane shutters are placed with the back down.



Fig. 3. Cut out or copy this meter scale and substitute it for the original 0-1-mA meter scale.

To read the shutter speed, turn on the lamp, select the shutter speed and cock the shutter. Momentarily depress the RESET button and note that the meter indicates zero. Then operate the shutter release. The meter pointer will rise to the correct shutter speed and remain steady. Over a period of several minutes, the meter pointer will slowly drift upscale.

Besides checking the shutter for accuracy, you can also check its consistency. Take several readings at each shutter speed and note how closely the readings agree. A slight variation is normal; but if one or more readings differ greatly, the shutter's mechanical operation should be checked.

If you make photographs in cold weather, you can get some useful information by running a series of temperature tests. Place the camera in a refrigerator (or outside if it is cold) for a couple of hours to allow all moving parts to get cold. Then make a series of shutter-speed tests before the camera has had time to warm up. You may have to remove the lens so that moisture condensation will not block the light — or you can use a stronger light source. You will probably find that the shutter slows down somewhat at low temperatures; but if it becomes inoperative, special low-temperature lubrication must be used.

If, at any time, you find that your shutter is not operating properly, do not attempt to repair it yourself unless you are expert at the job. Take it to a professional and save time and money.

How To Fix A Compur Shutter

(Printed in SW Council News June 1947 by Chas. Seely Martz, Vol. 11, No. 6 FRPS, APSA) — Contributed by Howard F. Lind, Medford, Oregon.

You say you have never been inside a compur shutter! Then there is no better time than the present. All you need is a few simple tools, a screwdriver, pliers, perhaps a bobby pin, a large cold cream jar (the cold cream can be stacked on the table until you are through with the jar) and a shutter, preferably one that won't work.

Then you will need a work bench. If you are working at home, the top of the piano or radio will be satisfactory. Lay your tools on the bench, pull up a chair, take the shutter in your hands and study it. If you have a feeling at this point that you may be getting into something you don't know too much about, just remember that the thing was put together by someone like yourself and the fellow who put it together had but two hands.

Having regained your confidence, examine the outside of the shutter for screws, knobs, and protrusions. With your screwdriver and pliers, twist everything one way or the other until it loosens. As parts come loose, place them in a cold cream jar. When you have cleaned off the knobs and gadgets, the shutter should have a pleasant, smooth feel. If you want to spend a few minutes enjoying the feel of the smooth contours, take time out to do it. Even sculpture can be enjoyed with the hands as well as the eyes.

Now, you are ready to go inside. This may be a bit more difficult but don't give up. Simple reasoning will tell you something is holding it together so, locate the something and remove it. But — and this is important — don't break the glass on either side of the shutter except as a last resort.

Once inside you will be amazed. The profusion of little wheels and springs and things is a joy to behold. Still these things were put in by hand and they

can be taken out the same way. Use your tools freely. Twist anything that you can catch with the pliers, bobby pin or screw driver and as the pieces are removed, place them in the cold cream jar with the stuff you took off the outside.

Remember, your shutter adventure has a two-fold purpose. Aside from the sheer joy of taking it apart, you are interested in determining why it didn't work. So, watch for broken parts or foreign matter.

When you have removed the last piece that will come loose, it might be well to turn on the radio and try to get the time. Time has a way of passing quickly when one is enjoying oneself and you may have worked past your bedtime. If you find that it is too late to do any more work on the shutter, just screw the lid on the cold cream jar and place it in the bathroom where you found it, or if you prefer, put it on the shelf where you store your cameras. It might be well to scratch off the cold cream label and relabel the jar — Compur Shutter Parts.

A good workman always cleans up his work bench. Pick up your tools and put them in their regular places. And don't forget the cold cream. Since you have used the jar you must find a place for the cream. If the wife's shortening container isn't full — but why should I tell you how to save cold cream.

Note to Editor: Installment covering assembling of shutter will follow.

Martz
Telegram to Editor: UNABLE TO PUT SHUTTER BACK STOP SUGGEST YOU HAVE READERS TAKE COLD CREAM JAR TO CAMERA SHOP STOP IF CAMERA MUST BE USED IN MEANTIME SUGGEST CLOSING DOWN HOLE IN CAMERA FRONT TO PIN HOLE SIZE AND USE HAT FOR SHUTTER STOP ANY SIZE HAT WILL WORK STOP I AM USING SIZE SIX AND ONE EIGHTH WITH EXCELLENT RESULTS! MARTZ

EDUCATION & FIRMNESS MAKE NEW ACCOUNTS PAY PROMPTLY

Starting right is half the battle in collecting bills from new accounts, according to a veteran in the business. Here's what Thomas McFarland, credit manager of the *Milwaukee Journal and Sentinel*, told a convention of newspaper controllers: "A new account is like a puppy. If you don't train the customer properly, explaining the terms of sale and policing the account until it has acquired proper habits, you'll be winding the clock every month before you get your money. If the customer gets away with a late payment without comment, he will try it again and again." In a successful business, marginal accounts can total as much as two-thirds of the credit granted, the speaker said. "In handling them, we presume the customer is buying all he can afford to pay. If we let him procrastinate for 30 days, the account carries a balance twice as large as he can handle, so we either have to let him ride 30 days slow or shut him off so he can catch up. The situation compounds itself if allowed to continue for 60 or 90 days."

"We find it good practice to make contact immediately after the account has passed the due date, so we can restate the terms and arrange for payment. If the customer is unable to pay, a short extension can usually be granted."

Teamwork between sales and credit departments is an important key to success. With the right information in advance, the salesman can avoid overselling a small customer or underselling a large one. "If an account is going to be cash-with-order," Mr. McFarland observed, "it is easier to ask for it outright than go back and deny the customer the credit he expected."

HONEYWELL'S FIRST BULLETIN TO PARTS CUSTOMERS

This bulletin is unique in the industry and it is our hope that it will be followed by further bulletins. One of our SPT members, Dick Knight, has put a lot of work and thought into the publishing of this most important bulletin. Our thanks to Dick and his associates for bringing this information to the industry. The first bulletin covers these topics:

- Location of Honeywell Photographic Product Division
- National Service Department (functions and facilities)
- Honeywell Parts Sales Policy
- Service Literature
- Terms of Sale
- Honeywell Parts Dealer Account
- Scope of Parts Available
- Parts Backorder System
- Merchandise Return Policy
- Parts Order Processing and Shipping
- Shipping Damage
- Warranty Service Stations
- Service Training

The enclosures included in the bulletin are:

1. Lists of Service literature available from Honeywell
2. A parts dealership application (unless you already have an account with Honeywell.)
3. A description of several items "on sale" in Honeywell's parts department and an order form for same.
4. A directory of Service Department personnel.

If you would like to know how to become a Honeywell parts dealer, write direct to Dick Knight, Honeywell, Inc., Photographic Products Division, P. O. Box 1010, Littleton, Colorado 80120.

CHAPTER NEWS

Orvil Stokes of Danville, Illinois, has been putting forth a great deal of time and effort in an attempt to organize an SPT Chapter in the Danville area. The following members have been asked for their reactions to this proposal by Mr. Stokes:

Erwin M. Hill, Jr., Springfield, Ill.
A. A. Vollmer, Springfield, Ill.
David B. Otto, Champaign, Ill.
Gary Schuyler, Champaign, Ill.
A. L. Breitwieser, West Lafayette, Ind.

As stated in Leland Bartel's article on Chapter News in the September/October issue of the **SPT Journal**, this is an excellent means for members to get together and share information and learn more about their chosen profession. Let's get behind Orvil's effort and make the proposed chapter a reality.

Executive Secretary

I began as Executive Secretary of your Society on November 30 of this year. After two weeks, I am beginning to get the feel of the office but there is so much yet to learn. I am here to serve you and hope that with your help, I am able to do just that. Please ask for any information you might need and I will do my best to find it for you. **SPT** has made big strides in the past years and it is my hope that we will continue to do so. This can only become fact if we all work together. Keep sending in the Service Notes and articles for the Journal. We now have **SPT** on the mailing list of several trade magazines and will be including pertinent articles from these magazines in the Journal which we feel will be of great benefit to all members. Send me your ideas on how we might better serve each other and the organization and may 1971 show a growth in interest and participation of all **SPT** members.

Lucille Gustafson

ADVERTISING ANNOUNCEMENT

A proposal passed by the Board of Directors on November 30, 1970, authorized for the first time paid advertising in the **SPT Journal**. Among the provisions of the advertising proposal were these:

- 1) The advertising rate to be \$50.00 per page.
- 2) Advertising space to be initially limited to one page per member. This is to prevent "swamping" an issue with advertising for one member. The society also wants to insure that the ratio between advertising and articles is small, probably no more than 1 to 10.
- 3) Advertising to be paid in advance because **SPT** has no provision for handling accounts receivable.

Advertising from members is actively encouraged. The purpose of the advertising revenue is to offset cost of publication of the **Journal**. It is not the intent of the Society to make the **Journal** a profit making enterprise.

Please address your advertisements and inquiries to the Executive Secretary.

Letters to the Editor

Dear Editor

I am writing to offer an idea that I think would be of use to most members, especially those of us who are new in the business.

Would it be possible for you to compile a listing of names and addresses of parts supply houses, sources of manuals, distributors of test equipment, correct mailing address for the parts departments of the various brands, etc. Outside of National Camera, I wouldn't have the foggiest idea of where to write for parts. In the May-June Journal under the Camera Shop Article, mention is made of aerotronic shutter speed testers and Bell and Howell collimators, also Heiland sync testers. If a guy knew where to write he could get the information from all these various companies and decide what suits his needs and budget.

It would save a man a lot of time if he could get parts from a source close to home but he has to know that source is there before he can take advantage of it. Keep up the good work — that little journal is a good deal.

David N. Kieffer

Ed. Note

• The number of source addresses kept on file by an active camera repair shop is at least 100, and in the case of my own shop about 300. Publishing a list in the Journal would no doubt be quite costly and impractical. There are several reasons why.

Addresses in themselves are not enough. One has to know what firm handles what makes and models of cameras in order to use the address. For example, at one time there were eight sources of Mamiya parts... but that meant that you had to know what specific source handled the camera model you needed parts for, because none of the seven other sources had the parts you needed. Sears products, in which my shop specializes, are quite

complicated to deal with because their merchandise is made by a variety of manufacturers, and the secret is to find out who made it. Some of their equipment is made by non-photographic manufacturers, such as GM Laboratories!

A constant problem is that of address changes as well as source changes. Our card file at Metro is updated several times a week because new companies emerge, old ones die, and camera equipment lines are shifted to a new importer or distributor. Along with that, one frequently must write to a specific individual or department in order to get fast results, and these individuals and departments in a source company change frequently.

So now let me tell you how the larger shops get around these difficulties. Most maintain a card file where camera names and models are listed alphabetically. Each card for each camera indicates where parts and service information may be gotten. Another card file lists sources alphabetically and has on the card the current address of the source, plus any unusual information required. Changes in sources are noted on the camera cards, and changes of address or department or individual are noted on the source cards. One technician in the shop has the job of scanning each issue of the trade publications, such as **Photo Weekly**, **Photo Dealer**, **Photo Trade News** to note these changes before we need to order parts. It would seem to me that the person not doing camera repair full time would be wise to order all his parts through National Camera, because they are one of the few organizations in this country that have the ability to order virtually any part for you. Further, they are the only place I know of that will order a part for you. By contrast, other organizations may sell you the part if they have it, but almost never will they

order one for you if they don't have it. There is something of a premium for ordering through National Camera, of course. It costs a bit more because National Camera incurs some costs in handling your order, and it takes a bit longer than ordering directly.

Some of our members will want to order directly for various reasons, and no doubt will be looking for a way for SPT to help. The simple publication of addresses isn't enough. There is another solution, but it depends on a number of members supporting it financially.

In this solution the user would initially receive a complete set of cards — both camera and source cards. Then he would receive corrected and new cards as they were available. SPT itself could not provide this information, but I feel would have a contract with a repair firm which had this information available. The repair firm would advise SPT of corrections and additions. Further, the repair firm would be able to confirm the information by using it constantly in its parts orders.

This kind of service would have to be financed on an initial fee and subscription service. To make a wild guess, the initial fee would be \$100 and the yearly subscription to update the cards would be \$20.

To get away from that idea for a while and back to your original question, there are industry directories which list many addresses you will need. Both **Photo Dealer** and **Photo Trade News** publish annual trade directories which if I remember correctly are sent free to subscribers.

James Todd Amos
President

Dear Editor

Certain cameras, such as TLR's and 35mm's where the base plate is not readily removable, do not lend themselves to easy identification marking under the present system. On occasions where I have had these

cameras for repair I explain the marking system to the customer and ask if would be alright with them to mark the camera in a visible spot inside the camera back. Several customers have refused this suggestion stating that they "don't want their camera scratched up". Also if you receive the same camera at a later date for repairs in another area the marking for the date and repair area cannot be changed.

I have noticed on some cameras that have been serviced at the factory, such as Kodak, a small pressure sensitive label is used to indicate repairs. Could the Society initiate something along this line by supplying us, at a nominal fee, with labels of this type? All that would be required is a small label printed with "SPT SERVICED" with room below for marking with a ballpoint pen the necessary information. The labels should be supplied in rolls for convenience of handling. A label of this type could be used inside the camera back in a visible spot, inside the base plate or on the bottom of a projector.

I would appreciate your comments on this suggestion.

Ervin Hill
Springfield, Ill.

Ed. Note

• The SPT Uniform Marking System has many functions, all of which must be considered. For instance, several of the uses require that the marking be confidential, and scribing the marking on the inside of covers that are not normally removed by the customer meets this need. If repairs are subsequently made to the equipment, the new markings are placed below or beside the previous markings, thereby leaving a historical record of repairs, which many of us think is desirable. We would not like to see the markings destroyed.

TLR's pose a problem as to where to place the marking. My suggestion would

be to put the marking either inside the right side transport cover, or inside the front (shutter) cover. The technician is the judge of where to put the marking, and he should try to place it on the inside of the equipment in an area where another technician working at a later time would most likely notice it.

Pressure sensitive labels on the equipment where the customer can see them don't seem to be a good answer to our problem. The major problem as I see it is that the label is easily removed by the owner — or thief. Use of the words "SPT SERVICED" would, I think, be opposed by the Society because the Society does not want to imply that it can guarantee the quality of members' work.

James Todd Amos
President

Dear Editor

A couple of issues back I posed the following questions: Why aren't the manufacturers, importers, and distributors in the photo industry members of SPT? Why aren't they buying ads in the SPT Journal and contributing articles?

I have not seen an answer to my questions. We could all benefit from this increased membership and industry cooperation. The manufacturer, importer and distributor would find an eager audience for his message, whether it be of a technical nature or an ad to sell his wares. While the technician would have a greatly expanded source of information. Who would benefit the most from this type of industry cooperation — the customer for all our products and service, the casual snap-shooter, the amateur and the professional would all benefit from our improved cooperation. And after all, aren't they the sole reason for our being in business? Everyone in SPT should make an effort to bring the other segments of the photo industry into the society.

Orvil L. Stokes
Danville, Ill.

Your excellent question as to why the manufacturers, importers and distributors were not a part of SPT has not been overlooked. Mr. Amos has recently given me a list of companies to contact and I am in the process of doing that at the present.

We too feel their interest in our organization would be of mutual benefit.

Lucille Gustafson
Executive Secretary

Dear Editor

I wish to register my disapproval of the arbitrary method used in raising dues without adequate notification of, or discussion with the total membership. Even our labor union requires a general ratification. In spite of rising costs, I feel that doubling the dues in one year is disproportionate to the increased costs.

I believe in SPT and certainly wish to continue membership. The value of sharing technical experiences with the members of the society is a great one. I would hope that in the future if problems develop, whether in expenses or other categories, they will be brought to the attention of the general membership as they arise. Possibly members would have some helpful suggestions.

William E. Keith
Los Angeles, Calif.

Supply & Service Directory

In alphabetical order by states and Canadian provinces, we list below those members offering to do repair work for other members and listing items for sale.

A member wanting work done (the handling shop) will decide for himself the qualifications of the member doing the repair (the working shop). We suggest these arrangements between the two: (1) that discounts and pick-up and delivery be by arrangement between the two shops; (2) if the mails are used that the handling shop pay postage and insurance to the working shop and the working shop postage back to the handling shop; (3) that the estimate be made only by the working shop. The handling shop can then price the job to his customer as he sees fit.

It is understood that the Society of Photo-Technologists, in compiling this list, shall in no way be held responsible for breaches of contract between members, lost merchandise or unsatisfactory work performed.

UNITED STATES

CALIFORNIA

D. VILLARI, Photo Equipment Services,
211 Grand Avenue, Pacific Grove,
Calif. 93950. Phone (408) 372-4600
Will repair Pentax, Rollei, Leica, Hassi
Shutters, Bell and Howell and Graflex.
Also Strobflash units.
For Sale: Parts for Kodak, Leica, Bolex,
Honeywell and others.

**GEORGE A. FURY, George Fury Camera
Repairs, 8909 Laurel Avenue, Fontana,
Calif. 92335. Phone 822-8933**
Will repair Pentax, Kodak Instamatics,
electronic flash equipment, Sawyers,
Anscomatic and Kodak Projectors.

**JOHN C. HILL, Santa Cruz Photo
Equipment Repair, 232 Seaborg
Place, Santa Cruz, Calif. 95060**
Will repair projectors, microscopes
and photo accessories.

COLORADO

**JAMES TODD AMOS, Metro Camera
Service, Inc., 1973 S. Federal Blvd.,
Denver, Colorado.**
Will repair Tower, B&H, Sawyers, Kodak
& Bolex Projectors, LaBelle AV equip-
ment, Bolex movie cameras, B&H still
and movie cameras.

FLORIDA

**M. M. OWENS, P.O. Box 4093, War-
rington, Fla. 32507**
Will repair Still and Motion Picture
Cameras, Projectors, Meters, Range-
finders, Flash units, Laboratory and
processing equipment.

**J. F. STAUFFER, Stauffer Cine-Photo
Shop, 6172 Seminole Blvd., Largo,
Fl. 33540**
Will do machining of special tools and
parts.
For sale: Eastman Special Adhesive
910.

GEORGIA

**SFC ELIJAH JOHNSON, JR., P.O. Box
143, Hinesville, Georgia 31313**
Will repair Nikons, Canons, Minolta
SRT 101, RF Leica III Series, 100 and
104 Instamatics.

IDAHO

**STAN'S CAMERA REPAIR, P.O. Box
843, Twin Falls, Idaho 83301.**
Will repair 16mm 70 DR, Bolex 16mm
Rex and Standard Models, Hasselblad,
Compur Shutters.

MICHIGAN

**JOHN A. WOLDING, 5178 Seven Mile,
South Lyon, Mich. 48178**
I offer for sale precision steel ball sets,
40 balls, 8 sizes, 3/64 inch to 7/32
inch.

MINNESOTA

**WILLIAM MUNT, 9 Park Drive East,
Circle Pines, Minn., 55014.**
Will repair electronic, optical, remote
control, sound equipment.

NORTH DAKOTA

RALPH O. BOYER, 1903 N. 7th St.,
Bismarck, North Dakota 58501.
Will repair 8mm and Super 8 Cameras.

OREGON

BEN BARTON, 33 SE 91st Avenue,
Portland, Oregon 97216
Will buy, sell or repair antique and
classic cameras.

LLOYD F. BAZANT
Western Instruments
Rt. 3, Box 1004
Albany, Oregon 97321
Phone (503) 926-3262

RUBBER STOPPER WRENCHES — A
real time saver and helper for you.
Fresh black rubber stoppers make
excellent wrenches for lens assemblies,
retaining rings, and large headed rings,
plus many other uses. They provide a
firm grip on the inside of rings or on
top of flat headed screws without a
chance to scratch or distort. Fourteen
— 14 individual stoppers provide a total
of 28 wrenches! Sizes range from
10mm thru 53 — in selected close steps
so you can find just the right one.
Other sizes available on special order.
14 stoppers for only \$7.50 prepaid in
the U.S.A.

UTAH

ORIGENES A. ZIBETTI, 7168 South
1700 East, Salt Lake City, Utah
84121
Will repair movie cameras, projectors
and flash units.

CANADA

ALBERTA, CANADA

STEVE STRUSA, 7-15916-109 Avenue,
Edmonton 50, Alberta, Canada
Will repair all cameras, projectors.
Custom build.

NEW BRUNSWICK, CANADA

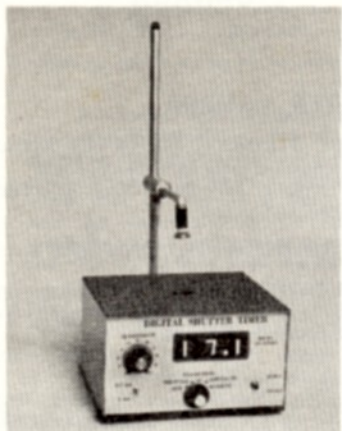
ROY TAYLOR, R and R Photographic
Service, 87 Fleet St., Moncton, New
Brunswick, Canada
Will repair Projectors, Tape Recorders,
Audio Visual Equipment.
For sale: Busch viewing lens, Kopil
self timer for movie camera.

QUEBEC, CANADA

BRUCE BODKIN, 8570 25th Avenue,
Apt. 6, Montreal 456, Quebec,
Canada
Will repair all Minolta, Center Shutter
Cameras, and Beseler Products

ENGLAND

ROGER SHARLAND SERVICES
5 Broad Quay
Bristol. BSI 4DA. U.K.
Will repair all still cameras, exposure
meters, motion picture equipment and
cameras.



THE DIGITAL SHUTTER TIMER

The **NOW** instrument for Camera Repairmen!

- Easily understood numeric readout always gives time in milliseconds. Easily converted to fractional seconds with provided chart.
- When time is less than 100 ms, accuracy is to 0.1 ms.
- Computer type memory holds readout until next shutter operation, then automatically resets itself to zero. Manual reset also possible.
- A self contained quartz assures permanent, precise calibration.
- No warm is required - fully transistorized.
- A simple adjustment assures exact 'half open to half closed' timing.
- Integrated circuits and several other solid state devices make it possible to design this instrument only 9" wide, 11" deep, and 5" high, and weigh only 7 pounds.

Model I gives you;

- Exposure time for all open back cameras, leaf AND focal plane.
- Flash sync delay time. Also travel time of first curtain of FP's.
- Closed contact time of all contacts. Quick way to see variation of operation.

Model II gives you;

- All of the three features of the Model I PLUS -
- Pulse counting ability for frames per second of movie cameras & projectors.

Accessories available for either model;

- Curtain Travel Time Accessory gives complete, precise timing of BOTH curtains of all open back FP cameras. Curtain travel can be either right or left hand traveling types, at any speed setting.
- Exposure time also possible with accessory in place, which mounts on top of Digital Shutter Timer.

Prices; Model I \$385, Model II \$450, Curtain Travel Time Accessory \$100. Timers shipped pre-paid to any U. S. address via Air Express insured. The May/June 1970 issue of the SPT Journal gave an excellent description of the DST. Order from, or obtain additional information from
WESTERN INSTRUMENTS, Rt. 3, Box 1004, Albany, Oregon 97321
Phone (503) 926-3262

ORDER BLANK

Please send me:

Complete set of previously published Service Notes
with Binder at \$22.50 _____ \$ _____

SPT Binder only (1½ inch ring) at \$4.00 _____ \$ _____

Payment of 1971 Regular Dues \$20.00 _____ \$ _____

11"x14" Membership Certificates
(regular members) at \$1.50 \$ _____

Other (describe) _____ \$ _____

Total amount enclosed _____ \$ _____

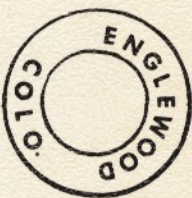
Name _____

Address _____

City _____

State _____ Zip _____

Make your checks or money order payable to The Society of Photo-Technologists.



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